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Rubber Research Scheme (Ceylon)

Combined Third & Fourth Quarterly Circulars for 1945

December, 1945

H. W. CAVE & CO. COLOMBO

Rubber Research Scheme (Ceylon).

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Office and Laboratories.—Dartonfield Estate, Agalawatta, Ceylon.

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NOTICES

DARTONFIELD ESTATE — VISITORS' DAY

Owing to a temporary shortage of staff there will only be one Visitors' Day at Dartonfield each month, namely, the *second Wednesday*. The services of technical officers will be available to visitors on that day; the estate superintendent will be available every Wednesday. Visitors are requested to arrive on the estate not later than 9-30 a.m.

Visitors will be welcomed at the station on other days provided an appointment has been made in advance.

Dartonfield Estate is situated about 3½ miles from the main Matugama-Agalawatta Road, the turn-off being near culvert No. 14/10. The distance from Colombo is approximately 47 miles.

PUBLICATIONS

Rubber Research Scheme publications comprising Annual Reports, Quarterly Circulars and occasional Bulletins and Advisory Circulars are available without charge to the Proprietors (resident in Ceylon), Superintendents and Local Agents of Rubber estates in Ceylon over 10 acres in extent. Forms of application for registration may be obtained from the Director. Extra copies of publications can be supplied to the Superintendents of large estates for the use of their assistants.

ADVISORY CIRCULARS

The undernoted Circulars may be obtained on application at 25 cents per copy. Future issues in the series will be sent free of charge to estates registered for the receipt of our publications.

(1) Notes on budgrafting procedure (revised June, 1943).
(3) Notes on Rubber seedling nurseries (revised September, 1943).
(4) Contour lining, holing and filling, cutting of platforms, trenches and drains (revised June, 1943).
(5) Straining box for latex (January, 1940).
(6) Notes on the care of budded trees of clone Tjirandji 1 with special reference to wind damage (September, 1938).
(8) Planting and after-care of budded stumps (revised June, 1943).
(10) Root disease in replanted areas (August, 1939).
(14) Rat Control (September, 1940).
(16) Increasing the crops from Ceylon Rubber estates (January, 1942) and two Supplements.
(17) Tapping young budded trees (May, 1942) and two Supplements.
(18) Rubber manuring under wartime conditions. (November, 1942).
(19) Density of Planting and Thinning-out, (December, 1942).
(20) Planting material recommended for use (1944) (revised May, 1944).
(21) The Control of Bark Rot and Canker. (April, 1944).
(22) Oidium Leaf Disease. (April, 1944) and two Supplements.
(23) Uniformity in the Nomenclature of Clones and Clonal Seedlings. (December, 1944.)
(24) Treatment of Brown Bast. (December, 1944.)
(25) Ground Covers. (January, 1945).

FIELD EXPERIMENTS ON DARTONFIELD ESTATE—XXVIII

MEASUREMENTS OF GROWTH IN REPLANTED AREAS (1945)

L. A. WHELAN, *Soil Chemist.*

No. 2 Replanting Experiment 1938. 19½ Acres
(Fertiliser Trial)

THIS area was replanted with budded stumps in 1938. The 1944 manures were applied in September at the following basic rates per tree: $N=P_2O_5=K_2O=6$ ozs. The compost application was 55 lbs. per tree screened material. Girth measurements at 4 feet were made in June, 1945 and a summary is given below:—

Mean Girth in inches per Tree.

O	N	P	K	NP	NK	PK	NPK	Compost	Mean
16.96	16.79	19.04	16.57	20.13	18.35	20.10	20.47	20.09	18.72

Standard error .627

Significant difference (odds 19:1) 1.79
(odds 99:1) 2.40

From the figures given above the following general responses are obtained for N, P and K:—

General mean	Response to N	P	K
18.55	.77	2.77	.64

Significant difference (odds 19:1) .84
(odds 99:1) 1.13

The response to P is highly significant. The responses to N and K are not significant although the response to N closely approaches the lower significance level.

The increments at 4 feet for the preceding 12 months are:—

O	N	P	K	NP	NK	PK	NPK	Compost	Mean
2.07	2.08	1.97	1.91	2.00	2.14	2.12	2.10	2.09	2.05

Differences between treatments are not significant. The general responses are:—

General mean	Response to N	P	K
2.05	.06	.00	.06

Owing to the retarding effect of tapping on growth and the taking into tapping of trees at different times, the above measurements are of limited value, but they indicate that phosphate should be applied in the early years of growth to give the maximum effect.

Tapping.—The number of tappable trees (18 ins.) per treatment in August, 1944, is expressed below as a percentage of the total plot trees per treatment :—

O	N	P	K	NP	NK	PK	NPK	Com-post	Mean
62	65	85	55	94	75	91	94	93	79

The percentage of tappable trees for each clone is :—

TJ. 1	PB. 183	W. 259	HC. 28	PB. 86	PB. 186	Mean
87	66	80	88	70	85	79

Yields.—The total yields per treatment over the 18 months period commencing with the tapping of the first trees in March, 1944 are :—

Yields Dry Rubber in Grams per Treatment

(Total plot trees tapped and untapped per treatment=96)

	O	N	P	K	NP	NK	PK	NPK	Compost
Yield	2,834	2,163	9,305	2,784	13,149	6,415	12,673	12,803	12,528
No. of tappings	246	228	695	288	1122	580	979	1127	1,039
Yield per tapping	11.5	9.5	13.4	9.7	11.7	11.1	12.9	11.4	12.1

Yields Dry Rubber in Grams per Clone

(Total plot trees, tapped and untapped per clone=144)

	TJ. 1	PB. 183	W. 259	HC. 28	PB. 86	PB. 186
Yield	15,392	5,884	6,261	15,901	13,580	16,636
No. of tappings	1,216	580	648	1,603	745	1,512
Yield per tapping	12.7	10.1	9.7	9.9	18.2	11.0

Since trees are assessed for tapping every 6 months on the basis of girth measurements, the figures for yield per tapping are only of general interest and should be treated with reserve.

Wintering and Refoliation.—On 20th January observations were made on the progress of wintering. Trees with half or more of their foliage turned brown were considered to have wintered. Clones HC. 28 and PB. 186 had not refoliated.

(only 4 plots included) Number of Trees wintered (as percentage of total plot trees per treatment)

O	N	P	K	NP	NK	PK	NPK	Compost
66	50	52	47	11	36	53	30	41

Trees wintered as percentage of total plot trees per clone.

TJ. 1	PB. 183	W. 259	HC. 28	PB. 86	PB. 186
31	73	39	not wintered	28	not wintered

On 7th February observations were made of refoliation in 4 blocks. Trees with half or more of their branches carrying new leaf were considered refoliated.

O	N	P	K	NP	NK	PK	NPK	Compost
95	80	84	91	45	75	78	56	72

Trees refoliated as percentage of total plot trees per clone.

TJ. 1	PB. 183	W. 259	HC. 28	PB. 86	PB. 186
58	84	79	13	79	86

As reported in the *Combined Quarterly Circular for 1944*, NP and NPK appear to retard wintering. Refoliation also was later where these mixtures had been applied. HC. 28 was late in wintering and in refoliating. PB 186 was late in wintering but refoliation was rapid.

No. 3 Replanting Experiment 1936, 9½ Acres
(Comparison of Methods of Opening, Planting and Manuring)

Budded stumps and stumped buddings planted May, 1936, Seed-at-stake planted August-September, 1936, budded in field December, 1937 to April, 1938.

Girth measurements were taken in June, 1945 and a summary is given in Table I below :—

TABLE I.

Mean Girth in inches per Tree.

	1944	1945	Increment 1944-1945
Methods of Opening :—			
(1) Platforms	23.71	25.31	1.60
(2) Trenches	22.82	24.43	1.61
(3) Pitted drains	22.75	24.40	1.65
		Not significant	
Methods of Planting :—			
(1) Budded stumps	23.75	25.39	1.66
(2) Stumped buddings	25.16	26.53	1.37
(3) Field buddings	20.39	22.22	1.83
Standard error	0.36	0.35	0.06
Significant Difference (odds 99:1)	1.46	1.44	0.26

Methods of Opening.—No significant growth differences between the different methods of opening.

Methods of Planting.—Growth differences between the field and the nursery buddings are still highly significant 9 years after planting.

The stumped buddings, budded stumps and field buddings were brought into tapping in March, 1942, December, 1942 and December, 1943 respectively. The tapping system used was S/2, d/2, 100% and all trees were tapped that had a girth of 18 inches or more from the union.

The yields have been estimated on the basis of one sample tapping per month converted to an average number of 130 tappings per year. The yields for the whole period are given in Table II. The figures in brackets are the percentages of trees tapped.

TABLE II

Yield in Pounds per Acre

Year	Stumped buddings	Budded stumps	Field buddings
1942	397(92)	*26(20)	—
1943	497(91)	406(92)	/26(77)
1944	679(92)	543(94)	375(77)
Total	1573	976	401
Excess	1172	*575*	—

(* Tapped in December of the year only)

A rough measure of the advantage obtained in the early years is given in the bottom line which shows the additional yield that can be obtained in wet districts by planting with nursery buddings.

Manuring.—Experimental manures were last applied in 1941. Only a slight difference in favour of the inorganic mixture has resulted, and the measurements are not reported above.

YIELDS OF BUDDED RUBBER AND CLONAL SEEDLINGS IN COMMERCIAL TAPPING

C. C. T. SHARP, *Botanist*

IN previous numbers of the *Quarterly Circular* a series of reports on "The Performance of Imported Clones in Ceylon" has appeared. It is proposed to discontinue these reports and to replace them with the present series which will consist of the yields of all clones and seedling families whatever their origin which are being tapped on a commercial scale.

Two previous questionnaires have been circulated to estates through their Agents and reports on the yields submitted have appeared in the *Quarterly Circulars* for 1943, p. 15 and 1944 p. 15.

The yields for 1944 have been received in response to a third questionnaire from 71 estates from a total area of 5,674 acres, a number of these are from fields tapped for the first time in 1943 and 1944 and include yields of some of the newer clones and of families of clonal seedlings.

Yields from Older Clones.—TJ. 1, TJ. 16, BD. 5, BD. 10, AV. 49 and AV. 50. In Table I the yields obtained from those estates with more than one of these clones in tapping are presented. Fields of less than five acres in extent or with fewer than 70 trees to the acre in tapping have been omitted.

In all cases the records are from fields tapped at 100 per cent intensity. In some cases the tapping intensity was reduced to 67 per cent during 1944, but the periods of tapping at the reduced intensity were too short for any conclusions to be drawn and the yields have not been included in the table.

In each case comparison is made between clones growing on the same estate. Too much reliance must not be placed on any one comparison, for the soil and general condition will vary from one field to another, but taking all the records together a fairly reliable guide can be obtained for estimating the merits of the different clones.

TJ. 1.—In most cases TJ. 1 remains the highest yielder of the most widely planted clones.

In several cases bad outbreaks of Brown Bast occurred, notably on estate 284 when a number of extra tappings were introduced in an endeavour to increase the crop. The spread of the disease was checked successfully by changing the tapping system to S/2, d/3, 67% but the fields had not been in tapping sufficiently long to show what yields would be obtained at the reduced tapping intensity.

It is interesting to note that the yield of TJ. 1 is much in excess of that of BD. 5 on estate 822 which is in a dry district for in the past doubt has been expressed as to the suitability of this clone to areas of low rainfall.

TJ. 16.—The yields of this clone are variable; but on the whole are lower than those of TJ.1. The very late wintering habit of this clone caused it to be severely attacked by Oidium on Estates 316, 350 and 128.

BD. 5.—This clone gives good yields though they are usually rather lower than TJ. 1. It is no longer recommended owing to its poor secondary characters.

AVROS. 49 and 50.—Both these clones give steady yields on a lower scale than the other three clones already mentioned. Though capable of yields of 800-900 lbs. per acre no record of yields of 1,000 lbs.or over has been received.

In general the yields are satisfactory and the poor results on Estate 688 can be attributed to the low stand per acre and the very poor soil.

Clones GL. 1, PB. 86, HC. 28 and 55.—Early yields of these clones are now available from several sources (Table II). Comparison is made where possible with TJ. 1 of the same age growing on the same estate. The comparison is not an exact one but will serve as a rough guide to the performance of these new clones.

Glenshiel 1, judged by the number of tapped trees per acre is clearly less vigorous than TJ. 1 though its yield per tree is in every case rather higher. Experience has shown that it is unlikely to withstand tapping at 100 per cent intensity for more than one year but good yields were obtained in Malaya from the experimental tapping of the clone at 67 per cent intensity.

Prang Besar 86 appears to give a lower yield than GL. 1 in the first year but its yield compares very favourably with TJ. 1. This clone has been widely used in Malaya and it seems probable that its good performance there will be repeated in Ceylon.

In general neither GL. 1 nor PB. 86 should be used on the poorest soils.

HC. 28 yields rather less than TJ. 1 on the two estates from which yields are available.

HC. 55 is no longer recommended for use.

Clonal Seedlings.—For the first time yields from commercial areas planted with seedlings trees from the Prang Besar Isolated Seed Garden are available and these are set out in Table III. Comparison is again made with fields of budded Rubber growing on the same estate.

The early yields are very satisfactory and in all cases when age is taken into account the yields during the first year are higher than those of the budded trees.

TABLE I

Yields of Clones in Commercial Tapping and Age in Years

Estate	District	Clone	Acres	6		7		8		9		10		11		12		13		14	
				Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%	Yield	%
822	Passara	Tj. 1	26																	811	100
		B. D. 5	26																	581	72
284	Kalutara	Tj. 1	51-194	445	100	517	100	769	100	797	100	945	100	1050	100	1130	100				
		Tj. 16	29-62	154	35	281	54	469	61	575	72	591	62								
		B.D. 5	10-89					482	63	674	84	865	91	1073	102	1152	101				
		AV. 50	22					316	41	608	76	617	65	715	68						
690	Kalutara	Tj. 1	33											713	100	818	100				
		B.D. 5	22											708	99	700	85				
		AV. 49	14									715		892	125	730	89				
		AV. 50	19									675		713	100	932	114				
350	Kalutara	Tj. 1	10			582	100														
		Tj. 16	10	392		567	97														
		B.D. 5	10	348																	
		B.D. 10	10			566	97														
218	K. V.	Tj. 1	8									777	100	866	100			1018	100		
		B.D. 5	7									741	95	817	94			774	76		
		B.D. 10	8									872	112	943	109			855	84		
		AV. 50	5									475	61	648	75			757	74		
688	Ratnapura	Tj. 1	81							313	100	358	100	556	100						
		Tj. 16	66									218	61								
		B.D. 5	70							227	72	453	126	537	96						
		AV. 50	40-61					302		442	141	503	140								
128	Kegalle	Tj. 1	22-43	392		718	100														
		Tj. 16	25			428	60														
316	Ratnapura	Tj 1	8											394	100	616	100	748	100	821	
		Tj. 16	22							630		519		593	150	657	107	548	73		
166	Kalutara	Tj. 1	61	501	100																
		B.D. 5	25	329	66																
01	K.V.	Tj. 1	5			667	100														
		B.D. 5	5			134	20	280													
26	K.V.	Tj. 1	29			443	100														
		B.D. 5	24			554	125														
153	Kalutara	Tj. 1	31			537	100														
		B.D. 5	19			466	87														
476	Galle	Tj. 1	11-22					346		512	100	591		732							
		AV. 49	9							440	86										
546	Kegalle	Tj. 1	13			611															
		AV. 49	9					500													
168	Kurunegala	Tj. 16	5					829		982		1225		1147		969					
		AV. 49	6					601		624		994		814		851					

NOTE.—Tapping system S/2, d/2 100%. Fields with less than 70 trees per acre in tapping are omitted.

TABLE II

Yields of Clones GL. I, PB. 86, HC. 28 & 55.

Estate	Clone	Acres	Trees per Acre		Yield in lbs.							
					6 years		7 years		8 years		9 years	
			Total	Tapped 1944	Per acre	Per tree	Per acre	Per tree	Per acre	Per tree	Per acre	Per tree
141	GL. 1	19	140	36	184	5·1						
	P.B. 86	2½	147	87	369	4·2						
	Tj. 1	24½	140	58	225	3·9						
546	GL. 1	2	115	40			282	7·0				
	PB. 86	1	148	115			818	7·1				
	Tj. I	13½	129	90			611	6·8				
172	GL. 1	9	158	91			330*	3·6				
	Tj 1	22	119	90			259	2·9				
350	GL. 1	10	117	95			658	6·9				
	Tj. 1	10	117	96			582	6·1				
	Tj. 16	10	117	102			567	5·5				
350	PB. 86	10	120	101	407	4·0						
	Tj. 16	10	116	99	392	3·9						
153	HC. 28	5	143	129			401	3·1				
	Tj. 1	21	128	115			583	5·1				
152	HC. 28	14	99	91					527	5·8	589	6·5
	HC. 55	3	89	71					328	5·0	467	6·6
	Tj. 1	8	108	100					544	5·7	727	7·3

* Tapped f or 10 months only.

TABLE III

Yield of Prang Besar Isolated Seed Garden Seedlings.

Estate	Acres	Control Clone	Date of planting P. B. seedlings	Date of budding in field (F) or planting budded stumps (S)	Stand per acre		Yield in lbs. 1943		1944	
					Total	Tapped 1944	Per acre	Per tree	Per acre	Per tree
613	3		6/38						548*	
	7	TJ. 1		6/38 (S)					462*	
166	5		1/39		183	183			541	2·9
	25	TJ. 1		6/38 (S)	131	88			547	6·2
152	5		6/38		164	157			507*	3·2
	4	PB. 25		6/38 (S)	184	115			313*	2·7
	13		6/38		117	57			583*	10·2
153	10	TJ. 1		10/37 (F)	108	101	333*		440	4·4
	21	TJ. 1		6-12/37 (S)	128	115	412		583	5·1

* Yields for March to December, only.

All trees tapped S/2, d/2, 100%

DESCRIPTION OF A METHOD AND APPARATUS TO KEEP GLENSHIEL 1 LEAVES FREE FROM ATTACK BY BATS*

E. C. K. MINOR

IT is generally known that the leaves of the clone Glenshiel 1 are much relished by certain species of bats — large fruit bats and Flying Foxes.' It is remarkable how leaves of other clones contiguous with the GL. 1 are left quite untouched. The bats generally choose to eat the outermost younger leaves. Often uneaten parts of leaves are found under the affected trees, and frequently wads, spat out by the bats, composed of the veins and mid-ribs — all that is left after the softer parts have been swallowed — are seen strewn about the ground. These wads are compact rolls of about 1—1½ inches long and ¼ inch diameter. Damage can be very severe, denuding the twigs and topmost branches, which then stick out bare from the lower and older leaves. The attacks seem worst during June-September, the reason possibly being that then there are few fruits ripe in the jungles. The trees most attacked are those adjoining paddy fields.

A method has been worked out on Mirishena Estate, (Kalutara District), initially by Mr. V. Manuel, the Assistant Superintendent, which has proved most successful in checking the attack; it is based on catching the bats by slinging large-meshed nets among the trees. Bats are caught only at night by this method — the darker the night the better. Sulphur-dusting and poison baits have been tried with little success.

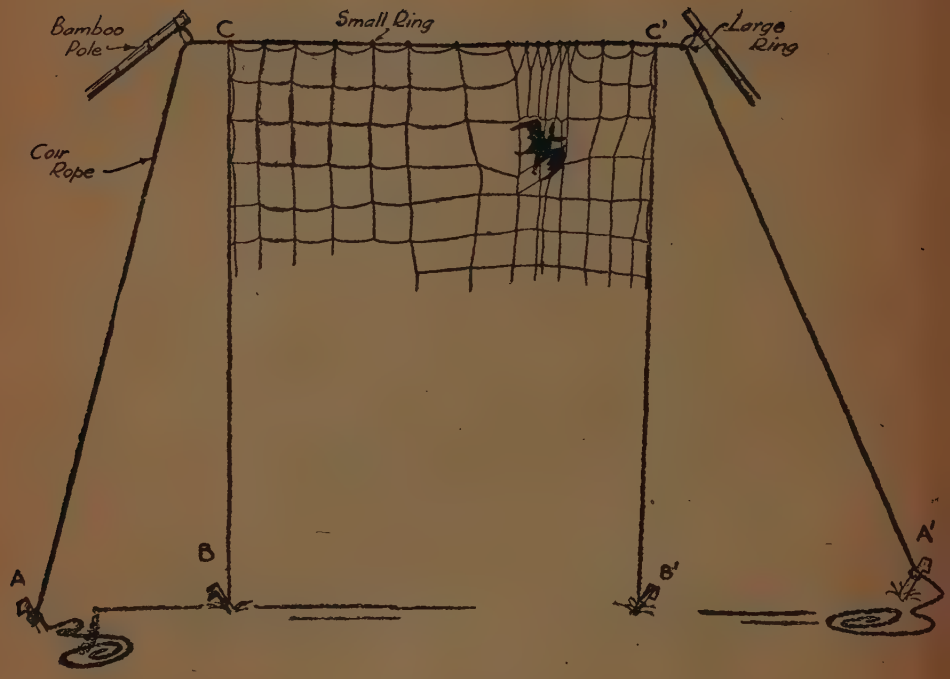
As the wing-spread of the 'Flying Foxes' to be caught is about 2½ feet it will be realised that these nets have to be tough. No, 10 thread is found suitable, though after a catch light repairs have to be carried out next day, but thicker thread would be noticed by the bats. The net is made in 12 inches meshes and is about 30 feet square.

A diagramatic sketch is given overleaf, which, with the following notes, it is hoped will explain how the method works:—

(a) Two bamboo poles are attached as high as possible to adjacent trees and at their top ends are large rings through which is passed a thin coir-rope. This rope is fastened by slip-knots to stakes driven in the ground — 'A and A.' The net is suspended from this coir-rope by small rings which can easily slide along the rope. The lower ends of the net are tied tightly by string to pegs in the ground — 'B and B.'

(b) The secret of the net's success is that at its top ends it is tied to the coir-rope at two points — 'C and C,' about 15 feet apart, (remember the net is 30 ft. square); this enables the small rings in between, to which the net is attached, to be easily movable, so that when a bat gets entangled in the meshes the small rings move together on account of the weight and the struggles of the bat, and so it gets more entangled in the meshes in consequence. The curved claws of the thumbs and the toes of bat get caught in the threads and prevent it escaping. (I have tried to illustrate this in the sketch: on the left the net is shewn as it hangs — note the possible play horizontally of the meshes; then on the right a bat is shewn entangled in the

* The Rubber Research Board welcomes papers on subjects of general interest from outside contributors, but does not accept any responsibility for the views expressed therein.


Bamboo Pole
C
Small Ring
C'
Large Ring
Coir Rope
A
B
B'
A'

meshes and the entanglement is increased by the meshes collecting around it. In actual practice one bat is caught at a time and the whole net comes into operation).

(c) When a bat gets itself entangled a watcher quickly loosens the slip-knots of the coir-rope at 'A and A,' and down falls the net. After the bat has been killed and removed the net is hoisted again. The 'Flying Foxes' sell readily among the labour force. Cost of a watcher at night is to be considered, but as the bats set up quite a loud screeching when caught he need not be awake all the time.

Cost per net — (30 ft.×30 ft., meshes 12 ins.×12 ins.)

	Rs.
String — 7 reels No. 10 Thread — black for preference ...	3.50
30 small rings and 2 large ones	1.50
4 skeins coir-rope	80
Labour for making net	5.00
	Rs. 10.80

P.S.—Mr. Minor has since supplied the following additional information :—

(1). The foliage of 75 per cent of the trees in the area was damaged by bats.
(2). 96 bats were caught by the nets in 3-4 months.
(3). No further damage to the foliage has been noticed.

MEETINGS

RUBBER RESEARCH SCHEME (CEYLON)

Minutes of the seventy-fifth meeting of the Rubber Research Board held at the Secretariat, Colombo, at 2-30 p.m. on Monday, 11th June, 1945.

Present.—Mr. L. J. de S. Seneviratne, C.C.S. (in the chair), Col. C. J. D. Lanktree, C.C.S. (Acting Deputy Financial Secretary), Mr. T. Amarasuriya, M.S.C., Mr. W. N. de Alwis, Mr. W. P. H. Dias, J.P., Mr. A. M. Clement Dias, Mr. F. J. C. de Mel, Mr. R. P. Gaddum, Mr. F. H. Griffith, M.S.C., Mr. R. J. Hartley, and Mr. R. C. Kannangara, M.S.C.

Mr. M. W. Philpott, Acting Director, was present by invitation.

An apology for absence was received from Mr. L. P. Gapp.

1. MINUTES

(a) Confirmation.—Draft minutes of the meeting held on 12th March, 1945, which had been circulated to members, were confirmed and signed by the Chairman.

(b) Appointment of Research Assistants.—The financial position in connection with the proposal to appoint 4 research assistants was considered and it was agreed that steps be taken to make the appointments.

2. BOARD

The Chairman reported the following changes in the membership of the Board since the last meeting :—

(a) Messrs. A. M. Clement Dias and F. J. C. de Mel had been nominated by the Low-Country Products Association for three years

from 19th May, 1945, in place of Messrs. W. N. Gunawardena and J. L. D. Peiris whose periods of membership had expired.

(b) Mr. W. H. Attfield had resigned and Mr. R. P. Gaddum had been nominated in his place by the Ceylon Estates Proprietary Association with effect from 2nd May, 1945.

(c) Mr. W. P. H. Dias had been renominated as a representative of smallholders for a further period of three years from 10th June, 1945.

A vote of appreciation of the services of the outgoing members was passed.

3. Experimental Committee

(a) Membership.—Agreed that Mr. F. J. C. de Mel should act for Mr. R. C. L. Notley as a member of the Committee.

(b) Recommendation made at meeting held on 30th April, 1945 : Brown Bast K. P.—The recommendation that a Brown Bast K.P. be appointed at Dartonfield on the approved salary scale was approved.

(c) Recommendations made at meeting held on 11th June, 1945 : Tenders for buildings and Hedigalla cart road.—As recommended by the Committee, a Sub-Committee was appointed to consider the tenders and award suitable contracts.

Arrangements for supervision of construction of the buildings and cart road were decided on.

4. Reports

(a) Annual Report for 1944 — was adopted.

(b) Director's report for the 1st quarter 1945 — was adopted.

5. Accounts

(a) Statement of Receipts and Payments for the 4th quarter 1944 — was approved.

(b) Dartonfield, Nivitigalakele and Hedigalla accounts for December, 1944 — were tabled.

(c) Balance Sheet and Income and Expenditure Account for 1944.— The Chairman reported that the Auditor-General's report had not yet been received. The accounts were adopted subject to audit.

(d) Over-expenditure and savings on votes for 1944.—A statement showing details of over-expenditure and savings on votes for 1944 was considered and supplementary votes passed to cover the over-expenditure.

(e) Re-votes of 1944 estimates.—Unexpended balances of 1944 capital votes were revoted as required.

(f) Inventory Report for 1944 — was adopted.

6. Staff

(a) Director.—Reported that Mr. T. E. H. O'Brien, Director, had left the Island on six months' leave on 15th May, 1945.

(b) Chemist.—Reported that Mr. M. W. Philpott, Chemist, had returned to the Island and resumed duties on 20th April, 1945.

7. London Advisory Committee

Agreed that the Board's contribution for 1946 should be half-share of the Committee's expenditure for the year.

8. Publications

The following publications were tabled :—

1. *Combined Quarterly Circular for 1944.*
2. *Advisory Circular No. 25.*
3. *Second Supplement to Advisory Circular No. 17.*
4. *Special Circular.*

The meeting then terminated.

RUBBER RESEARCH SCHEME (CEYLON)

Minutes of the seventy-sixth meeting of the Rubber Research Board held at the Secretariat, Colombo, at 2-30 p.m. on Monday, 10th September, 1945.

Present.—Mr. L. J. de S. Seneviratne, C.C.S. (in the chair), Mr. G. W. Aldridge, Mr. T. Amarasuriya, M.S.C., Mr. W. Neal de Alwis, Mr. W. P. H. Dias, J.P., Mr. A. M. Clement Dias, Mr. F. J. C. de Mel, Mr. R. P. Gaddum, Mr. L. P. Gapp, Col. K. D. H. Gwynn, Mr. R. J. Hartley, Mr. R. C. Kannangara, M.S.C., Mr. F. A. Obeyesekere, and Mr. G. R. Whitby, M.S.C.

Mr. M. W. Philpott, Acting Director, was present by invitation.

An apology for absence was received from Col. C. J. D. Lanktree, C.C.S. (Deputy Financial Secretary).

1. Minutes

(a) Confirmation.—Draft minutes of the meeting held on 11th June, 1945, which had been circulated to members, were confirmed and signed

(b) Matters arising from the minutes —

Appointment of Research Assistants.—Salaries and terms of service of Research Assistants were agreed on.

2. Board

(a) The Chairman welcomed Col. K. D. H. Gwynn who had been nominated by the Rubber Growers' Association to act for Mr. E. W. Whitelaw during the latter's absence from the Island, with effect from 13th July, 1945.

(b) Reported that Mr. F. H. Griffith, M.S.C. had left the Island on six weeks' leave on 26th August, 1945.

3. Experimental Committee

Recommendations made at meeting held on 30th July, 1945 :—

(a) School and Creche.—Noted that the Committee had approved the estimates for construction of a school and creche and schoolmaster's quarters. A vote was passed to cover their cost.

(b) Tapping commercial areas at Dartonfield and Nivitigalakele.—Agreed that tapping on the double-three system be continued until the next wintering period and that the opinion of the Visiting Agent be obtained as to the system to be adopted thereafter.

(c) Building programme.—Agreed that provision be made in the estimates for 1946 for the construction of 1 senior staff bungalow, 2 junior staff bungalows and 3 quadruple cottages for labourers.

(d) Purchase of spare motors.—In view of the difficulty and delay experienced in repairing motors it was agreed, as recommended by the Committee, that six spare motors of various sizes be purchased in order that experimental work may not be interrupted when a motor breaks down.

(e) Watcher for experimental areas.—The recommendation that a field watcher be employed at Dartonfield was approved.

The minutes were adopted subject to the above comments.

4. Smallholdings Committee

Minutes of the meeting held on 3rd August, 1945 were adopted.

Reported that the Acting Director, the Smallholdings Propaganda Officer, and a member of the Smallholdings Committee had interviewed the Land Commissioner and his Visiting Agents on 31st August, and had discussed a number of points regarding the division of responsibility for advising smallholders, etc.

5. Reports

(a) Acting Director's report for the 2nd quarter 1945 — was adopted.
(b) Mr. M. W. Philpott's report on visit to U. K. — was tabled.

6. Accounts

(a) Statement of Receipts and Payments for the 1st quarter, 1945 — was approved.

(b) Dartonfield, Nivitigalakele and Hedigalla accounts for January to May, 1945 — were tabled.

(c) Auditor General's report — was adopted.

7. Staff

(a) Director.—Noted that Mr. T. E. H. O'Brien, Director, was expected to return from leave at the end of the year.

(b) Geneticist.—Reported that Dr. C. E. Ford, Geneticist, had left the Island on leave on 20th, July.

(c) Botanist.—Reported that Mr. C. C. T. Sharp, Botanist, was due to return to Malaya shortly. Agreed that the post be advertised.

(d) Junior Staff —

Dispenser-Clerk.—Reported the appointment of Mr. L. M. Dias as Dispenser-Clerk with effect from 1st August.

8. Rubber Conference

Agreed that a Rubber Conference be held in 1946.

9. Proposals for Future Development

Comments received from rubber producers' organisations on the Board's proposals for future development were considered and it was agreed that the proposals be submitted to the Minister for Agriculture and Lands with a request that the research cess be increased to 25 cents per 100 lbs. (exclusive of the cess of 5½ cents per 100 lbs. for research on new uses).

The meeting then terminated.

Minutes of the seventy-seventh meeting of the Rubber Research Board held at the Secretariat, Colombo, at 2-30 p.m. on Monday, 29th October, 1945.

Present.—Mr. L. J. de S. Seneviratne, C.C.S. (in the chair), Col. C. J. D. Lanktree, C.C.S. (Deputy Financial Secretary), Mr. T. Amarasuriya, M.S.C., Mr. W. Neal de Alwis, the Hon'ble Mr. G. E. de Silva, M.S.C., Mr. W. P. H. Dias, J.P., Mr. A. M. Clement Dias, Mr. F. J. C. de Mel, Mr. R. P. Gaddum, Mr. L. P. Gapp, Col. K. D. H. Gwynn, Mr. R. J. Hartley, Mr. R. C. Kannangara, M.S.C., Mr. R. C. L. Notley, and Mr. F. A. Obeyesekere.

Mr. M. W. Philpott, Acting Director, was present by invitation.

Apologies for absence were received from Mr. G. R. Whitby, M.S.C., and Mr. F. H. Griffith, M.S.C.

1. Minutes

Draft minutes of the meeting held on 10th September, 1945, which had been circulated to members, were confirmed and signed by the Chairman.

2. Board

Mr. R. C. L. Notley.—The Chairman reported that Mr. R. C. L. Notley had returned to the Island and resumed his seat with effect from 22nd October, 1945, relieving Mr. G. W. Aldridge.

3. Acting Director's Report for the 2nd Quarter 1945

This was approved.

4. Research Programmes for 1946

These were approved.

5. Accounts

(a) Statement of Receipts and Payments for the 2nd quarter 1945 — was approved.

(b) Dartonfield, Nivitigalakele and Hedigalla accounts for June and July 1945 — were tabled.

(Mr. F. A. Obeyesekere came into the meeting).

(c) Estimates of income and expenditure for 1946.—Draft estimates providing for an excess of expenditure over income for the year of Rs. 188,235 were considered and approved subject to the amendment that provision be made for the appointment of three additional Rubber Instructors.

(The Hon. Mr. G. E. de Silva left the meeting).

(d) Rates of subsistence and lodging allowances.—Revised rates of subsistence and lodging allowances payable to staff officers and Board members were approved.

6. Experimental Committee

(a) Dates of meetings.—Agreed that the dates of Board and Experimental Committee meetings should be fixed in consultation with members at the end of each meeting.

(b) Recommendations made at meeting held on 16th October, 1945 —

1. *Repairs to estate roads.*—The recommendation that the necessary repairs to the roads at Dartonfield and Nivitigalakele be undertaken was approved.

2. *Repairs to Gardner engine.*—Messrs. Walker & Greig's estimate for supplying and fitting a new piston and liner to the Gardner engine was approved.

(c) Recommendations made at meeting held on 29th October, 1945 :—

1. *Extension to Secretary-Accountant's bungalow.*—The recommendation that a new bungalow be built for the Secretary-Accountant was approved.

2. *Bonus to Estate Staff.*—Agreed that no V—J day bonus be paid to the estate staff.

7. Staff

(a) Botanist :—

1. *Resignation of Mr. C. C. T. Sharp.*—The Chairman reported that there had been no objections to the acceptance of Mr. Sharp's resignation from the post of temporary Botanist. The resignation was therefore accepted and it was agreed that Mr. Sharp be allowed to leave before 30th November if necessary.

It was agreed to place on record the Board's appreciation of Mr. Sharp's services.

2. *Advertising posts of Botanist and Mycologist.*—It was agreed that the post of Mycologist be re-advertised, and the draft advertisement for the posts of Botanist and Mycologist was approved subject to a few minor amendments.

(b) Director.—Reported that Mr. T. E. H. O'Brien, Director, who was due to return from leave on 15th November, 1945, had sent a medical certificate stating that he would not be fit to return for a further 3 months. The extra leave was approved.

8. London Advisory Committee

Minutes of meetings of the Committee and the Technical Sub-Committee held on 27th April, 1945 — were tabled.

9. Publications

The Combined 1st and 2nd Quarterly Circular for 1945 was tabled.

The meeting then terminated.

London Advisory Committee for Rubber Research (Ceylon and Malaya).

Member nominated by the Colonial Advisory Council of Agriculture and Animal Health:

Dr. H. A. Tempany, C.B.E.

Member nominated by the Government of Ceylon:

Mr. L. Lord

Member nominated by the Governments in British Malaya:

Mr. J. Lornie, C.M.G.

Members representing Malayan planting interests—nominated by the Rubber Growers' Association:

Mr. P. J. Burgess (Chairman).
Mr. J. L. Milne.
Mr. Eric Macfadyen.

Members representing Ceylon planting interests—nominated by the Rubber Growers' Association:

Mr. G. H. Masefield.
Mr. George Brown
Mr. H. W. Horner.

Member representing Manufacturing interests:

Lieutenant-Colonel J. Sealy-Clarke.

Ex-Officio Members:

Sir H. A. F. Lindsay, K.C.I.E., C.B.E., Director of the Imperial Institute.
Professor V. H. Blackman, Director of the Botanical Laboratories, Imperial College of Science and Technology.
Dr. S. P. Wiltshire, Director of the Imperial Mycological Institute.
Dr. W. G. Ogg, Director of the Rothamsted Experimental Station.

Secretary:

Mr. J. J. Endcox (Acting)

The Technical Sub-Committee consists of members of the Advisory Committee with the following co-opted Members:

Mr. G. Martin (Superintendent of Rubber Investigations).
Mr. G. E. Coombs.
Mr. G. G. Balazs.
Dr. Samuel Pickles
Dr. H. P. Stevens
Dr. D. F. Twiss
Prof. R. G. H. Clements

STAFF.

Mr. G. Martin, B.Sc., A.R.I.C., F.I.R.I.
Mr. H. C. Baker, M.Sc., A.R.I.C., A.I.R.I.
Mr. W. G. Wren, B.Sc., A.R.C.S.

RUBBER RESEARCH SCHEME (CEYLON)

LIST OF PUBLICATIONS FOR SALE

Bulletins No. 1-20 .Bound volume, Rs. 5·00. Later Bulletins Re.1·00 per copy

No. 1.	The Effect of Tapping on the Movements of Plant-Food in *Hevea Brasiliensis*	
No. 2.	The Effect of Tapping on the Movements of Plant-Food in *Hevea Brasiliensis*	
No. 3.	Seasonal Variations in the Movements of Plant-Food in *Hevea Brasiliensis*, Part I.	
No. 4.	The Physiological Effec s of Various Tapping Systems, Part I.	
No. 5.	Progress Report on Vulcanisation Tests.	
No. 6.	The Physiological Effects of Various Tapping Systems, Part II.	
No. 7.	The Physiological Effects of Various Tapping Systems, Part III.	
No. 8.	Seasonal Variations in the Movements of Plant-Food in *Hevea Brasiliensis* Part II.	
No. 9.	Vulcanization Tests.	
No. 10.	Vulcanization Tests.	
No. 11.	Variability in Rubber Manufacture	
No. 12.	Progress Report of the Rubber Research Chemist.	
No. 13.	Vulcenization Tests.	
No. 14.	On the Variation in the Number of Latex Vessels present in *Hevea Brasiliensis*	
No. 15.	Vulcanization Tests.	
No. 16.	On the Natural Clotting of Rubber Latex.	
No. 17.	Vulcanisation Tests.	
No. 18.	Measurements of "Bark Renewal"	
No. 19.	Vulcanization Tests	
No. 20.	Vulcanization Tests	
No. 21.	Vulcanization Tests	1919
No. 22.	Vulcanization Tests	1919
No. 23.	Vulcanization Tests	1920
No. 24.	Valcanization Tests	1920
No. 25.	Investigations on Samples of Plantation Para Rubber from Ceylon.	1921
No. 26.	Result of Trials of Ceylon Plantation Rubber for the Manufacture of Ebonite	1921
No. 27.	Investigations on Samples of Plantation Para Rubber from Ceylon, (out of print)	1921
No. 28.	Investigations on Samples of Plantation Para Rubber from Ceylon.	1922
No. 29.	Summary of the Principal Results Obtained from Investigations into the Properties of Ceylon Plantation Rubber in Relation to its Method of Preparation.	1922
No. 30.	The Penetration of Disinfectant on the Tapping Cut of *Hevea Brasiliensis* (out of print)	1922
No. 31.	On the Occurrence "of Rust" on Sheet Rubber.	1923
No. 32.	On the Preservation of Latex.	1924
No. 33.	Investigations on Samples of Plantatien Para Rubber from Ceylon.	1924
No. 34.	Investigations on Samples of Plantation Para Rubber from Ceylon.	1924
No. 35.	Investigations on Samples of Plantation Para Rubber from Ceylon.	1924
No. 36.	Investigations on Samples of Plantation Para Rubber from Ceylon.	1924
No. 37.	Investigations on Samples of Plantation Para Rubber from Ceylon	1924
No. 38.	Investigations on Samples of Plantation Para Rubber from Ceylon.	1925
No. 39.	Do (Final Report Series I)	1925
No. 40.	Do Series II	1926
No. 41.	Do First Interim Report on Artificial Ageing Tests.	1926
No. 42.	On the Smoking of Sheet Rubber in Relation to Mould Prevention.	1926
No. 43.	The Inter-Relationship of Yield and the Various Vegetative Characters in *Hevea Brasiliensis* (out of print).	1926
No. 44.	The Construction of Smokehouses for Small Rubber Estates (out of date)	1926
No. 45.	The Efficiency of Disinfectants and Fungicides.	1927
No. 46.	The Control of Bark Rot by Disinfectants.	1927
No. 47	Report on Variability of Ceylon Estate Grades.	1927
No. 48.	Brown Bast and its Treatment. (out of print)	1928
No. 49.	Report on Causes of Variation in Plasticity.	1928
No. 50.	Crepe Rolling.	1929
No. 51.	The Curing of Sheet Rubber.	1930
No. 52.	The Preparation of Uniform Rubber.	1932
No. 53.	Oidium Leaf Disease	1936
No. 54.	Report on a Visit to Malaya, Java and Sumatra.	1937

Hand books at Rs. 2-50 per copy.

The Preparation of Plantation Rubber.

The Budding of Rubber. By R. A. Taylor, B.Sc., Physiological Botanist (out of date)
Diseases of Rubber in Ceylon. By R. K. S. Murray, A.R.C.Sc., Mycologist.